REMARKS

This Amendment is responsive to the Office Action mailed on April 8, 2008. Claims 1-11, 13, 15, 20, 24-36 and 43-46 are pending in the application, although claims 13, 24, 25 and 45 have been withdrawn from consideration. Claims 1-11, 15, 20, 26-36, 43, 44 and 46 have been rejected. The Office Action also stated that the Supplemental Amendment filed on January 31, 2008, was not entered. By this response all pending claims 1-11, 13, 15, 20, 24-36 and 43-46 are canceled. New claims 47-65 are added to the application. Reconsideration of the application and allowance of claims 47-65 are requested.

New claims 47-65 particularly point out and distinctly claim the features that provide the invention with its superior abrasion resistance, flexibility and durability, and distinguish the invention from the prior art of record. These claims are similar to those presented in the unentered Supplemental Amendment. In particular, claims 47-64 recite a supple, globally flexible and locally hard abrasion resistant composite fabric that includes a flexible substrate and an array of hard, convex geometric-shaped polymer material guard plates on the substrate. The guard plates, which are arranged in a predetermined pattern on a substantial portion of the substrate and are substantially harder that the substrate, have a major dimension to minor dimension aspect ratio between about 3 and 1 with the minor dimensions less than about 100 mils. The polymer material of the guard plates partially penetrates into the substrate across the area of the plates to provide a mechanical bond between the guard plates and the substrate and to prevent detaching of the guard plates from the substrate when the substrate is flexed. The largest distance between adjacent guard plates is less than the lengths of the minor dimensions. The overall flexibility of the composite fabric is substantially determined by the flexibility of the substrate and the distances between the guard plates. Because the guard plates are relatively small, the fabric can be curved into relatively low radius contoured shapes. The guard plates provide the composite fabric with an overall abrasion resistance that is substantially greater than the abrasion resistance of the substrate. The fabric is also durable since the guard plates are resistant to breaking and peeling from the substrate. The flexibility and durability of the fabric, in combination with its superior abrasion resistance, makes it useful in a wide range of products.

Claim 65 is similar to claim 47, but recites a polymer substrate and polymer guard plates bonded to a substantial portion of the surface of the substrate. The abrasion resistance, flexibility and durability of the fabric recited by claim 65 are similar to those described above.

The undersigned attorney thanks Examiner Piziali for the courtesy of the personal interview held on April 14, 2007. Dr. Cliff Richardson, a technical representative of the assignee of the application also attended the interview. Mr. Richardson demonstrated several fabric samples embodying the invention. Brochures such as those attached to the declaration of Young-Hwa Kim filed on June 13, 2007, illustrating commercial products including the fabric of the invention were also shown to the examiner. In the course of these demonstrations, Dr. Richardson explained how the unique features and properties of the invention provide the fabric with its superior characteristics.

The differences between the recited fabric and the prior art of record were also discussed. In particular, the applicant pointed out that the Hoglund PCT publication WO 96/07509 discloses a grinding product having grit particle agglomerates that are attached to a cloth by a binding agent. As is evident from the drawing figures in the Hoglund PCT publication, these agglomerates are certainly not uniform thickness plates. Nor are they generally uniform thickness, non-overlapping plates arranged in a predetermined pattern like those of the applicant's claimed invention. On the contrary, the agglomerates are applied to the cloth by spraying, dipping the cloth in a suspension of a grinding agent or with a roller, resulting in a structure where the positions of the agglomerates in relation to the cloth may be different. (Hoglund publication, page 8).

During the interview there was some discussion of how the applicant's recited "plates" differ from the agglomerates shown in the Hoglund PCT application. Looking to the Merriam-Webster OnLine dictionary, perhaps the most relevant definitions for this situation are "a smooth flat piece of material," and "one of the broad metal pieces used in armor." Other definitions focus on the relatively thin, layer, and deposited characteristics of the associated structures (e.g., "a very thin layer of metal deposited on a surface of base metal by plating," and "a thin, relatively flat anatomical part of an animal body." The

"plates" recited in the claims are flat in that they have a generally uniform thickness, and form a relatively thin layer over the base substrate that provides a protective function like armor. The recited "plates" are also formed by printing process. The agglomerations shown in the Hoglund PCT publication, on the other hand, do not have these plate-like features. Rather than being flat and thin, they are irregular in shape and appear from the drawing figures to have thickness dimensions that approach those of their width or length dimensions. These features are consistent with the grinding product nature of the structure shown in the Hoglund publication. The applicant's claimed structure, on the other hand, is protective in nature.

Also discussed during the interview were the Fortier U.S. Patent 4,810,559, the Harpell U.S. Patent 5,196,252 and the Kirsch U.S. Patent 4,142,334. The Fortier patent discloses a structure with wear resistant platelets that are separately formed and applied to the fabric substrate (e.g., by gluing or compression molding as described in connection with Figs. 3a and 3b of the patent). Unlike the guard plates of the applicant's invention, the plates shown in the Fortier patent are not formed by printing. And unlike the invention recited by claims 47-64, the plates shown in the Fortier patent do not partially penetrate into the fabric substrate. The sizes of the plates shown in the Fortier patent and the sizes of the gaps between the plates are also generally larger than those of the applicant's invention and recited in the claims. The Harpell patent discloses a ballistic resistant fabric, but it too has separately manufactured and subsequently applied planar bodies (e.g., by stitching). The Kirsch patent discloses a cleaning cloth. Although this cleaning cloth includes printed structures, it is otherwise very different than the applicant's claimed invention. The printed structures are elongated bars. If these elongate bars are hard, the resulting composite fabric would not be globally flexible like the claimed invention because they would restrict the ability of portions of the fabric to bend. The high length to width aspect ratio of these bars may also cause them to break or peel from the fabric substrate if they were hard and the fabric was flexed, reducing the durability of the fabric. If unlike the applicant's claimed invention the bars are formed of soft material, the fabric may be flexible, but would still not provide the abrasion resistance of the applicant's invention.

Then-pending claims 1-6, 11, 15, 26, 27, 29-36 and 46 were rejected under 35 U.S.C. §102 as anticipated by, or in the alternative under 35 U.S.C. §103 as obvious over the Hoglund PCT publication. In connection with this rejection the Office Action noted that the claim recites printed guard plates, and that the patentability of a product does not depend on its method of production. This rejection is now moot, however, since these claims have been canceled by this response. For the reasons discussed above, the newly added claims recite structural features that patentably distinguish the invention from the grinding product shown in the Hoglund publication.

Then-pending claims 7-10 and 44 were rejected under 35 U.S.C. §103 as being unpatentable over the Hoglund PCT publication and further in view of the Jennings U.S. Patent 3,711,889. Specifically, the Jennings patent is said to disclose that it is known to use equilateral hexagon shapes as scrubbing agglomerates. This rejection is now moot, however, since these claims have been canceled by this response. Furthermore, the Jennings patent discloses a scrubber mitt and the combination of the teachings of this patent with those of the Hoglund publication does not teach or suggest a fabric having the features and advantages of the applicant's invention.

Then-pending claims 20, 29-36 and 43 were rejected 35 U.S.C. §103 as being unpatentable over the Hoglund PCT publication and further in view of the Tochacek U.S. Patent 5,310,590. The Tochacek patent is said to disclose that abrasive scrubbing fabrics may be made of cotton, polyester or a combination thereof. This rejection is now moot, however, since these claims have been canceled by this response. Furthermore, the Tochacek patent discloses stitchbond articles and the combination of the teachings of this patent with those of the Hoglund publication does not teach or suggest a fabric having the features and advantages of the applicant's invention.

Then-pending claim 28 was rejected 35 U.S.C. §103 as being unpatentable over the Hoglund PCT publication and further in view of the Lang U.S. Patent 4,315,379. The Lang patent is said to disclose that it is known to add a layer of neoprene to provide effective gripping. This rejection is now moot, however, since these claims have been canceled by this response. Furthermore, the Lang patent discloses a handgun grip and the combination of

the teachings of this patent with those of the Hoglund publication does not teach or suggest a fabric having the features and advantages of the applicant's invention.

In view of the specific structure of the recited composite fabric, and the differences and associated advantages this fabric has over the prior art of record, allowance of claims 47-65 are requested.

Respectfully submitted,

FAEGRE & BENSON LLP

By: _____
Walter C. Linder, Reg. No. 31,707
612/766-8801
Customer No.: 25764

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